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(54) HIGH STRENGTH COLD ROLLED STEEL SHEET AND ITS MANUFACTURE

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a high strength cold rolled steel sheet having ≥780 MPa tensile strength and ≥70 MPa amount of baking hardening and combining excellent stretch-flange formability, spot weldability, delayed fracture resistance, and impact resistance.
SOLUTION: A steel stock, having a composition in which 1.5-3.5%, by weight, Mn and 0.005-0.10% Nb are contained and further the amounts of C, Si, P, S, Al, and N are regulated to proper values, respectively, is heated to a temperature at which the amount of Nb unentered into solid solution becomes ≥0.003%, finish rolled at 950 to 800° C finish rolling delivery-side temperature, coiled at 700 to 400° C coiling temperature, and cold rolled. The resultant steel sheet is annealed at ≥800° C annealing temperature, rapidly cooled continuously down to ≤350° C at (15 to 150)° C/s cooling rate, cooled slowly down to ≤200° C at ≥15° C/min cooling rate, and then cooled rapidly down to room temperature. By this procedure, a structure composed essentially of fine bainitic structure of ≤2.5 μm average grain size is provided.